

sample is small, the propensity of low thiamine in female patients is intriguing and merits follow up.

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### Effect of Protein Sufficiency Rate on Hospital Length of Stay in Allogeneic HSCT Recipients

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**Background:** Patients can develop poor appetite, mucositis and gastrointestinal failure leading to malnutrition after hematopoietic stem cells transplant (HSCT). It has been reported that the sufficient nutrition strategies are related to decrease of infectious disease or acute GVHD. Therefore, the nutritional management throughout all transplant period is important. In general, two-fold higher protein than basic level is required for tissue repair as well as for preventing collapse of the fat free mass in patients. Based on this, 1.5g/kg-BW of protein are recommended in adult patients with cancer on *The Clinical Guide to Oncology Nutrition*.

However, there are only few previous reports about HSCT patients especially in Japan. In this study, we studied the protein sufficiency rate and the heat capacity / nitrogen ratio (non-protein calorie/nitrogen: NPC/N) as outcomes of nutritional management and analyzed the relationship between these factors and hospital length of stay.

**Methods:** This study enrolled 16 adult patients who received HSCT at Okayama University Hospital from Jun.2016 to Jan. 2017 and discharged before day 100 after transplant. We retrospectively collected data for percentage of body weight loss (%LBW), protein sufficiency rate, NPC/N, and blood chemistry data about nutritional status. Also, we compared these parameters between two groups that are defined by duration from start of preparative regimen to discharge. Group 1 (short-term group) includes patients with less than 50 days of stay and Group 2 (long-term group) includes patients with 50 days or more of stay.

**Results:** A tendency of the negative correlation between a protein sufficiency rate and hospitalization days was seen ( $r_s = .45$   $P = .1$ ). Also, duration of hospitalization was positively correlated to NPC/N ( $r_s = .924$   $P = .01$ ). In comparison of two groups (group 1 vs group 2), tendency of lower BW loss rate ( $-4.31\%$  vs  $-5.37\%$ ), lower NPC/N (130.7 vs 157.3) and higher protein sufficiency (99.9% vs 94.0%) were found in short-term group, which were not statistically significant.

**Conclusion:** Sufficient energy supply from protein might decrease hospital length of stay. Further analysis including more cases is ongoing.

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### Elderly Patients Undergone Hematopoietic Stem Cell Transplantation: Body Composition and Engraftment

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**Background:** Hematopoietic Stem Cell Transplantation (HSCT) in elderly is a brand-new issue. Changes in body composition after HSCT have been the subject of previous studies, however there aren't many studies in elderly people.

**Objectives:** To evaluate muscle thickness and visceral fat by US; % muscle mass, % fat mass and phase angle by BIA. To correlate body composition with engraftment(EN).

**Methods:** In this prospective study, we evaluated 16 HSCT patients ( $\geq 60$  years) at Hospital Israelita Albert Einstein, São Paulo, Brazil, on their first day of hospitalization, before HSCT and after the EN. The thickness of the right femoral quadriceps muscle (RFQ), measured at 6 cm from the top edge of the patella was measured using ultrasound (US) in B-mode, transversal plane. The visceral fat (VF) was measured in the abdominal region, by the thickness of the fat layer between the linea alba and the anterior wall of the aorta. The % muscle mass (MM), % fat mass (FM) and phase angle (PA) were evaluated by Bioimpedanciometry (BIA).

**Results:** Most patients were men (75%) with a mean age of  $64(\pm 5.0)$  years. We had 50% of autologous HSCT and 50% allogenic HSCT. The mean time EN was  $13(\pm 4)$  days. In the baseline, weight was  $80(\pm 17)$  kg, RFQ was  $1.8(\pm 0.3)$  cm and the VF was  $5.5(\pm 2.0)$  cm; %MM was  $68.5(\pm 11)$ ; %FM was  $27.5(\pm 7.5)$ ; PA was  $5.3(\pm 0.7)$ . After EN, weight was  $73(\pm 13)$  kg, RFQ was  $1.5(\pm 0.3)$  cm and the VF was  $5.0(\pm 2.2)$  cm; %MM was  $55.5(\pm 20.5)$ ; %FM was  $25(\pm 7.0)$ ; PA was  $7.4(\pm 0.8)$ . There wasn't significant difference between baseline and after engraftment, although all measurements had reduced in all patients, exception for PA and VF had increased. We found the negative correlation between engraftment and RFQ ( $r_p: -0.6$ ), independently of HSCT type by regression. ( $r_p: -0.6$ ).

**Conclusion:** In this cohort of patients, muscle thickness and mass was reduced, and visceral fat and phase angle was increased after engraftment. The higher muscle thickness correlated faster engraftment.

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### Influence of Zinc Deficiency and Severe Mucositis in Patients Undergoing Hematopoietic Stem Cell Transplantation

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**Background:** Mucositis is a complication found in patients undergoing Hematopoietic Stem Cell Transplantation (HSCT). It results in painful debilitating inflammation, vomiting, diarrhea, sleep disturbances, anorexia, weight loss and a decrease in quality of life. Several studies have demonstrated zinc serum levels could associate to mucositis and its degree.

**Objective:** The aim of this study was to correlate zinc deficiency with mucositis and/or mucositis degree.

**Methods:** It was a retrospective study, based on medical records and approved by the institutional ethics committee. We evaluated 117 patients ( $\geq 18$  years-old) undergoing HCST, who had zinc serum level evaluated until 5 first days

of admission in Hospital Israelita Albert Einstein, São Paulo, Brazil from January 2015 to April 2017. 59 patients were excluded who did not have serum zinc level in this period. None patient has taken zinc supplementation. We analyzed presence or absence and degree of mucositis, age (less or more than 60 years), and the time of neutrophilic grafting, presence or absence GVHD acute or chronic. Categorical variables were described, using SPSS version 17 software®, by absolute and relative frequencies and compared between groups with zinc serum levels normal (60–130 mg/dL) or low (<60 mg/dL) by means of chi-square, Pearson test, independent sample t-test and Mann-Whitney test.

**Results:** We analyzed 30 patients were undergone allogeneic HSCT, everyone treated myeloablative conditioning. We found a tendency the elderly population ( $\geq 60$ y) had more deficiency of zinc ( $P = .072$ ). 93% patients had mucositis. Severe mucositis (grades 3 and 4) was related to zinc deficiency ( $P = .01$ ). 28 patients were undergone autologous HSCT, 80% with mucositis, 72% had 1 or 2 degree oral mucositis. In these patients there was no statistical difference between the zinc deficiency and mucositis. We didn't find any significant result in GVHD and neutrophilic grafting in autologous an allogeneic HSCT.

**Conclusion:** We found severe mucositis is associated to zinc deficiency in allogeneic HSCT.

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#### Safety of Pleural and Peritoneal Drain Placement in Pediatric Hematopoietic Cell Transplant Recipients with Veno-Occlusive Disease

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**Background:** Thoracentesis and or paracentesis via pleural or peritoneal drains (PD) are often needed in hematopoietic cell transplant (HCT) patients with veno-occlusive disease (VOD) to relieve intra-abdominal pressure, improve respiratory mechanics and renal perfusion. However, these may increase the risk of infection in immunosuppressed patients. **Methods:** A retrospective study of HCT patients who developed VOD during the study period from January 1995 – May 2017 was conducted to analyze the safety of these procedures. **Results:** Thirty-nine (39) HCT patients developed VOD at a median of 12 days (range 3–29) post-HCT. Median age at transplant was 2 years (range 1 month–17 years). Thirty-six (36, 93%) patients received myeloablative conditioning, including 25 with busulfan-based conditioning. Peritoneal drain (PD) was placed in 22 (56%) patients, including 11 HCT recipients with severe VOD, at a median of 3 days (range 0–31) from the day of VOD diagnosis. Seven (18%) patients also had a chest tube (CT) placed at a median of 12.5 days (range 7–33) from VOD diagnosis. Ten (26%) patients were neutropenic at the time of PD or CT placement. Hypoxia or tense ascites were common indications for PD placement. Drains were placed by interventional radiologists ( $n = 12$ ) or intensivists ( $n = 10$ ). Five of the 22 (23%) patients developed hypotension requiring

fluid resuscitation. Seven (32%) patients with PD experienced drain obstruction requiring intervention, 6 (86%) were replaced. Obstruction and dislodgement (one each) were encountered with CTs. Median duration of PDs and CTs were 17 (range 4–55) and 6 (range 0–12) days, respectively. Two cases of peritonitis due to gram-negative rods (by gram stain only) occurred and both responded to treatment. Overall mortality was 46% (18/39 patients), but no deaths were directly attributed to drain placement.

**Conclusion:** Paracentesis and thoracentesis with drain placement were found to be safe in most patients who developed VOD.

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#### Impact of Peritoneal Drain Placement on Respiratory and Renal Outcomes in Pediatric Patients with Veno-Occlusive Disease Following Hematopoietic Cell Transplantation

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**Background:** Therapeutic paracentesis with peritoneal drain placement (PD) is often used in the management of hepatic veno-occlusive disease (VOD) in hematopoietic stem cell transplant (HCT) recipients. We hypothesized that PD placement would lead to improved outcomes, including respiratory and renal functions post-VOD.

**Methods:** We retrospectively studied a cohort of 39 HCT recipients with VOD (study period January 1995 to May 2017) and compared defined outcomes in groups stratified by timing and placement of PD.

**Results:** Twenty-two (22, 56.4%) patients had a PD placed including 11 with severe VOD. In comparison to patients without a PD ( $n = 17$ ), patients with PD ( $n = 22$ ) had similar frequency (65% vs. 91%  $P = .06$ ) and duration of respiratory support (median 16 vs. 9 days,  $P = .88$ ). Renal outcomes were comparable between both groups as evidenced by the incidence of acute kidney injury (76.4% vs. 86.3%,  $P = .68$ ); median time for normalization of age-specific creatinine (16 vs. 10 days,  $P = .06$ ); and need for dialysis (41.2% vs 18.2%  $P = .16$ ). Both groups had a similar incidence of intensive care admission (58.8% vs 86.4%,  $P = .07$ ) and equal ICU length of stay (LOS) (median 10 vs. 19 days,  $P = .07$ ). Interestingly, patients with PD had a significantly longer hospital LOS (median 41 vs. 60 days,  $P < .001$ ). In a subgroup analysis of patients with PD, there was no difference in the above defined outcomes between patients who had early PD placement ( $\leq 2$  days,  $n = 10$ ) compared to those who had a later PD placement ( $> 2$  days,  $n = 12$ ).

**Conclusion:** Although PD placement is associated with symptomatic relief from tense ascites and improves respiratory mechanics, we did not see a significant difference in patients who had a PD placed compared to those who did not. Additionally, timing of PD placement from VOD did not influence the outcomes.